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| APPLICATION NO.            | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|----------------------------|-------------|----------------------|-------------------------|------------------|
| 10/549,872                 | 09/11/2006  | Kevin J. Schrage     | 00758.1511USWO          | 5901             |
| 23552                      | 7590        | 04/29/2011           | EXAMINER                |                  |
| MERCHANT & GOULD PC        |             |                      | CLEMENTE, ROBERT ARTHUR |                  |
| P.O. BOX 2903              |             |                      | ART UNIT                | PAPER NUMBER     |
| MINNEAPOLIS, MN 55402-0903 |             |                      | 1776                    |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                       |                                       |  |
|------------------------------|---------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/549,872  | <b>Applicant(s)</b><br>SCHRAGE ET AL. |  |
|                              | <b>Examiner</b><br>ROBERT A. CLEMENTE | <b>Art Unit</b><br>1776               |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 49-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49-59 and 61-67 is/are rejected.
- 7) ☒ Claim(s) 60 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed March 2, 2011 have been fully considered but they are not persuasive.

Applicant argues (see section IV of the Remarks) that the shaping in Gillingham (WO 97/40917) refers only to making minor modifications in the outer perimeter of the coil. Thus, Applicant argues that there is no teaching or suggestion in Gillingham to distort a circular coiled media into a media having two parallel sides and two curved ends. The examiner respectfully disagrees with this interpretation of Gillingham. Gillingham broadly discloses that the filter elements can be selectively compressed for shaping the elements. Gillingham does not disclose that the shaping is only for minor modifications. One of ordinary skill in the art would reasonably expect "shaping the elements" to encompass changing the overall shape of the filter element as Gillingham discloses that filters having various shapes can be formed. It is noted that there is no discussion of only making minor changes at page 13, lines 26 - 28 of Gillingham. Claim 49 has been amended to include limitations directed to the number of coils, the perimeter, and the length of the center sealant strip. Applicant argues that these values define a filter having a relatively large hollow interior space made in the circular coil that is substantially distorted. Applicant argues that given the teaching of Gillingham one of ordinary skill in the art would not have been motivated to create such a large open coil and then to distort the coil in a substantial manner. Applicant does not provide any evidence that these values for the number of coils, the size of the perimeter, and the

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length of the center sealant strip are critical. The Examiner acknowledges that Gillingham does not specifically disclose forming a circular coil of this size and distorting it to have two parallel sides and two curved ends. The Examiner, however, considers it to be within the scope of a skilled artisan to determine the number and coils and perimeter needed to provide enough filter media for the desired use. Predictably selectively compressing a circular coil on both sides would result in a flattening of the coil and the amount the coil can be distorted would depend upon the size of the open center of the circular coil. The examiner considers it to be within the scope of a skilled artisan to determine the size of the open center space, which determines the length of the sealant strip, to allow for the desired amount of distortion. While Gillingham does not specifically disclose how the shaping is performed, basic engineering principles and geometry can be used to determine how to distort one shape into another shape.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 67 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 67 is indefinite because it depends from claim 18 which has been cancelled. For the purpose of examination claim 67 is considered to depend from claim 65.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 49 - 51, 54 - 56, 59, 61, 65, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillingham (WO 97/40917).

Gillingham teaches a method of preparing a z-filter media construction by coiling a sheet of filter media (48) about a central mandrel (54), or hub, as shown in figure 5. The filter media sheet (48), as shown in figure 4, includes a corrugated sheet (30) and a facing sheet (32). The filter media is provided as a construction comprising a fluted filter media sheet secured to a facing filter media sheet with a first seal therebetween. As disclosed in page 9 lines 26 - 28, the central mandrel (54) can be removable, thus a coreless coil would be formed. A coreless cylindrical coil inherently would have an open center. As disclosed in page 9 lines 28 - 30, Gillingham discloses it is possible to wind the media into other shapes, such as oblong or oval shapes. These shapes inherently include a shape having opposite, rounded ends separated by two, opposite, parallel sides. As disclosed in page 9 lines 30 - 31, the filter elements can also be selectively compressed, or distorted, to shape the filter elements. One of ordinary skill in the art would reasonably consider "shaping" the filter element to encompass a change from a first shape to a completely different second shape. Additionally, changing a shape from cylindrical to oval or oblong predictably would require pressing on opposite sides of the cylinder to flatten them out. Thus, the coreless cylindrical filter element (52) inherently could be formed into an oblong, or obround, shape by compressing the cylindrical

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element. The compressing step inherently would result in pressing on a side area of the coil in order to form the flatter sides of an oblong shape. Gillingham does not disclose providing a seal in the media center of the circular coiled configuration when the mandrel is removed. One of ordinary skill in the art, however, would predictably expect that it would be desirable to seal the center of the filter element otherwise a fluid stream to be filtered could pass straight through without being filtered. The distorting of the circular coiled configuration inherently acts to close the central opening. Predictably, in distorting from a circular shape to a shape having two straight sides the central opening would be closed to allow the sealant to block any flow through the central opening. As shown in figures 17 - 21 and 24, all of the obround filter media include a housing seal. Thus, after the filter media is formed a housing seal inherently is positioned on the media construction.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to distort the cylindrical coil to an oval or oblong shape, having curved ends and two parallel sides, with the media center sealed closed with a sealant material in order to form a non-circular filter element when only circular mandrels or hubs are available and to force all of the fluid to pass through the filter media.

Gillingham does not disclose any specific size or dimensions for the filter elements. Thus, Gillingham does not distinctly disclose a circular coiled filter media that is coiled at least 10 times around and having an outside perimeter of at least 60 cm. Gillingham does not specifically disclose the shapes the circular media can be distorted

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into and thus does not disclose the length of a center sealant strip of a media having two parallel sides and two curved ends. The amount the filter is coiled and the perimeter of the filter media affects the amount of media present and thus the filter surface area. There is no evidence that the size of the media being distorted is critical. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the starting circular coiled filter media to have at least 10 coils and an outside perimeter of at least 60 cm in order to produce a filter element that has the desired amount of filter surface area. When distorting a circular coiled filter media to close its coreless center, the length of the center sealant strip predictably is about half of the circumference of the open center. The size of the open center determines the amount the circular coil can be distorted. Once the center is closed further pressing would act to crush the flutes in the media. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose or optimize the size of the circular media so that when distorted it forms a media with a center sealant strip having a length of at least 12 cm long in order to allow form the desired amount of distortion to produce a media construction with curved ends and parallel sides of the desired size. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical, see *In re Woodruff*, 16 USPQ2d 1934.

In regard to claim 50, Gillingham discloses forming generally circular coiled configurations where the filter media is coiled on a hub and then the hub is removed to provide a coreless coil, which will have a central open space. This coreless circular

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configuration is then distorted in the obvious modification of Gillingham discussed above.

In regard to claim 51, the seal that is formed between the facing sheet and the fluted sheet can be considered a sealant strip.

In regard to claim 54, 65, and 66, as shown in figures 17 - 21, the housing seal (158) is provided on a bracket (154), or framework. Thus, to make the filter element the framework must be positioned of the filter media construction and the housing seal provided on the framework.

In regard to claim 55, as discussed above, the obvious modification of Gillingham provides a method to distort a coreless circular media coil into an obround or racetrack shaped media coil. A coreless obround shape inherently includes a center strip of the z-filter media construction. Gillingham does disclose how many flutes are located along this center strip. One of ordinary skill in the art would reasonably expect, however, that the length, and thus the number of flutes, of the center strip is related to the overall size of the coil. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to include at least six interdigitized flutes along the center strip in order to provide a filter coil of the desired size.

In regard to claim 56, in order to seal the central opening the circular coil is distorted such that a sealant strip forms a central seal in the coiled construction having an obround shape with no center core.

In regard to claim 59, in Gillingham the facing sheet is flat and non-corrugated, as best shown in figures 1 and 6.



In regard to claim 61, Gillingham discloses using a winding hub to form a circular coiled configuration. The winding hub inherently includes a catch slot that holds an extension of the filter media construction.

7. Claims 52, 53 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillingham as applied to claims 49 - 51, 54 - 56, 59, 61, 65, and 66 above, and further in view of Wydeven (US 6,743,317).

Gillingham is discussed above in section 6. In regard to claim 52, as shown in figure 5, the step of coiling in Gillingham comprises winding a corrugated/facing sheet strip including a backside sealant bead (40). Gillingham, however, does not distinctly disclose the material used to form the sealant bead (40). Wydeven discloses a similar coiled filter element, as shown in figure 4a. The flutes are alternatively sealed at both ends by sealant beads (40, 42). As disclosed in column 8 lines 47 - 50, the sealant beads (40, 42) can be formed by foaming urethane resins.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to use a foaming urethane material to form the backside sealant bead as suggested by Wydeven since this type of material is known in the art to form an effective sealant in coiled filter elements.

In regard to claim 53, as discussed above, Wydeven provides the reference teaching a sealant bead that foams. In order to foam, the sealant bead inherently must increase in volume. Wydeven, however, does not disclose the increase in volume of the urethane seal during cure. The increase in volume inherently is caused by gas bubbles

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formed in the urethane. One of ordinary skill in the art would reasonably expect that a larger increase in volume would result from more or larger gas bubbles in the urethane. More gas bubbles would provide a lighter sealant material, but would also reduce the strength and increase the porosity of the sealant. One of ordinary skill in the art predictably could determine the optimal degree of foaming, thus the optimal increase in volume, through routine experimentation to form a seal with the best balance of weight and seal strength.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham and Wydeven to use a foaming urethane that increases in volume by 40% during curing in order given this value produces a sealant material having the desired weight and sealing properties. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical, see *In re Woodruff* 16 USPQ2d 1934.

In regard to claim 57, as discussed above, Wydeven discloses using polyurethane as a sealant material in fluted filter media. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to include a central seal made from polyurethane inside of the coreless coil as suggested by Wydeven as it is known in the art to use polyurethane as a sealant material in fluted filter media.

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8. Claims 58, 62 - 64, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillingham as applied to claims 49 - 51, 54 - 56, 59, 61, 65, and 66 above, and further in view of Gieseke (US 6,610,117).

Gillingham is discussed above in section 6. In regard to claim 58, Gillingham does not disclose the material of the housing seal (158). As discussed in column 8 lines 23 - 34, Gieseke discloses a housing seal (250) made from a foamed polyurethane.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to include a foamed polyurethane housing seal secured to the outer surface of the media construction through the bracket (154) as suggested by Gieseke as it is known in the art to use foamed polyurethane to form a housing seal.

In regard to claims 62 and 63, Gillingham provides the steps of forming a coil and distorting it to an obround shape. The coil inherently includes a tail end of the media; however, Gillingham does not disclose sealing the tail end of the media along its length by a sealant. As shown in figure 1 and discussed in column 5 lines 40 - 45, Gieseke discloses a coiled filter media with a trail edge, or tail end, that is sealed along line "160" to secure it to the outside surface of the media coil. The sealant is disclosed to be a hot-melt sealant.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to seal the tail end along its length to the outside of the media coil using a hot-melt sealant as suggested by Gieseke as a means to keep the media coiled.

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In regard to claim 64, Gillingham is used as the primary reference teaching the steps of forming a coil and distorting it to an obround shape. As discussed above, the coil inherently includes a tail end of the media. Gillingham, however, does not disclose where the tail end is located after the distorting step. Gieseke is used as the secondary reference disclosing a racetrack shape media. Gieseke does not disclose where along the racetrack shape the tail end of the media is located. One of ordinary skill in the art would reasonably expect the media could be formed in the racetrack shape regardless of where the tail end is located. There is no evidence the location of the tail end is critical. The coil could be oriented in any manner as a design choice prior to being distorted so that the tail could be located anywhere along the outside of the media.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham and Gieseke to locate the tail end along a straight side as a matter of design choice.

In regard to claim 67, Gillingham does not disclose a framework having a plastic cross piece positioned as a face lattice. Gieseke discloses a housing member (650) and frame (605) on the obround or racetrack shaped filter element shown in figure 10. The seal member (650) and frame (605) together form a housing seal. The frame (605) includes a plastic cross piece (614) positioned as a face lattice. The frame (605) allows for a radial seal with a housing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gillingham to mount a framework having a plastic cross piece positioned as a face lattice to the filter media construction as suggested by Gieseke in

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order to allow the filter media construction to be used in housing that requires radial sealing.

***Allowable Subject Matter***

9. Claim 60 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

There is no teaching or suggestion in Gillingham for applying the second sealant strip to the fluted sheet before coiling with: a selected amount of sealant applied a first distance from a nearest edge of the filter media construction at a first location of the filter media construction adjacent a lead edge of the strip; a selected amount of sealant applied to a second distance from the nearest edge of the filter media construction in a second location of the filter media construction following the first portion, the first distance being further than the second distance; and, a selected amount of sealant applied a location of the filter media construction near a tail end and at a location further from a closest edge than the sealant on the second portion of the filter media construction. Further, there is no suggestion in any of the prior art to include these steps in the modification of Gillingham to produce a media configuration with two parallel sides and two curved ends.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT A. CLEMENTE whose telephone number is (571)272-1476. The examiner can normally be reached on M-F, 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Robert A Clemente/  
Examiner, Art Unit 1776